APPENDIX B

The Economics of Cross Subsidization

I. Industry Concerns

One of the primary arguments in favor of structural separation of enhanced services from basic service is that it eliminates the problem of assigning joint costs. Regulatory experience is replete with examples where joint production resulted in cross subsidization between two related products with the end result being large welfare losses. One need look no further than the cross subsidization between local basic service and long distance telephone service that resulted in large welfare losses and ultimately precipitated the structural dismemberment of AT&T. Even if there were substantial cost complementarities or economies of scope between local and long distance service, the distortionary impact of long distance prices well in excess of long run marginal costs subsidizing local service resulted in large welfare losses,[21] far in excess of any likely gains from joint production.[22]

The obvious question is whether we have an analogous situation here between local basic service and enhanced services. In particular, MCI, among others, poses the question of whether the potential distortionary effects of cross subsidization overshadow any cost savings from joint production. MCI, as a potential competitor in the enhanced service market, expresses their concerns

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[21] See Griffin, James M., "The Welfare Implications of Externalities and Price Elasticities for Telecommunications Pricing," *Review of Economics and Statistics,* February, 1982, 59-66 and Rohlfs, Jeffrey, "Economically Efficient Bell-System Pricing," Bell Laboratory Discussion Paper No. 138, January 1979.

[22] The evidence on cost subadditivity is mixed with Heckman, James J., "A Test for Subadditivity of the Cost Function with an Application to the Bell System," *American Economic Review,* September 1984, 615-623, finding evidence of mild cost subadditivity, while other studies such as by Roller, Lars-Hendrik, "Proper Quadratic Cost Function with an Application to the Bell System," *Review of Economics & Statistics,* May 1990, 202-210, rejecting cost subadditivity. Cost subadditivity involves notions of both economies of scale and scope whereby one firm can supply the market at lower cost than two or more firms.

that cross subsidization could forestall their ability to compete in the enhanced services market. [23] While MCI has not elaborated their theory of how cross subsidization would harm them, the logic would seem to proceed as follows: Through integrated operations, the former Bell Operating Companies (BOCs) will be able to shift costs of enhanced services into the local service rate base, earning excessive returns which would then be used to subsidize the cost of providing enhanced services. With the BOCs operating at an artificial cost advantage in the enhanced service market,[24] MCI and other ESPs will be unable to compete. Under this scenario, not only would MCI and other ESPs be harmed, but economic efficiency would be severely impaired. Just as artificially high prices in excess of the long run marginal costs of local service would produce welfare losses in the local service market, artificially low prices, below costs in the enhanced service market, could also produce potentially large welfare losses in the enhanced service market. Paradoxically, the BOCs would attain a monopoly in enhanced services by setting prices below costs, thereby precluding the entry of companies such as MCI with a reputation for being an aggressive competitor.

The purpose of Appendix B is to examine the theoretical conditions under which the above cross subsidization scenario might occur and to examine the likely welfare effects of manipulation of joint costs. Section II identifies three necessary conditions for cross subsidization to occur and considers whether those conditions occur in this situation. It is shown that at least one (and possibly all three) of the necessary conditions fails to be satisfied, thereby vitiating the scenario outlined above. But having shown that the above cross subsidization scenario cannot occur, does not prove that the ability to manipulate joint costs (by loading the costs of enhanced services into the cost of local service) is benign. Section III examines the welfare effects of raising local service rates through manipulation of joint costs. Specifically, Section III asks what is the welfare loss in the basic service market, given the likely scope for joint cost manipulation.

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[23]For example, see the May 11, 1992 memo from Thomas Campbell on behalf of MCI to the Arizona Corporation Commission, Utilities Division.

[24]For example, see the May 11, 1992 memo from Thomas Campbell on behalf of MCI to the Arizona Corporation Commission, Utilities Division.

II. Necessary Precedents for Cross Subsidization

The purpose of this section is to identify three necessary conditions under which a BOC would artificially increase the price of local service and use the excess profits to subsidize the price of enhanced service below the competitive price that independent suppliers would require. Three necessary conditions would need to be satisfied before such cross subsidization would be an economically rational response.

Condition 1: *The regulatory constraint on the price of local service must be binding.*

Stated differently, for a BOC to wish to engage in joint cost manipulation by assigning joint costs to local basic service, it must be profitable to do so. Clearly, then the preexisting regulated

$$\pi_b(P_b^u) = \pi_b(P_b^r) \qquad\qquad \textbf{(B1)}$$

price of local service (P_b^r) must be below the unconstrained profit maximizing price (P_b^u):

where $\pi_b(\cdot)$ refers to the profit level corresponding to a given price of basic service. If alternatively, regulation was not binding so that the price of local service had already obtained the profit maximum $(P_b^u = P_b^r)$, securing an additional rate increase in local service would only lower profits accruing from local service.

Ten years ago, this condition would surely have been satisfied. Virtually all available estimates of the price elasticity of demand for local service show that market demand is highly price inelastic,[25] and it is well known that a monopoly price must fall in the elastic portion of the demand schedule. Indeed, Taylor (1984) cites a variety of studies that place the price elasticity of local service demand between -.05 and -.17, suggesting there is ample room to increase local service prices. The advent of local exchange by-pass competition suggests that the BOCs' demand schedule is much

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[25]See Taylor, Lester D., Telecommunications Demand: A Survey and Critique, (Ballinger, Cambridge, 1980).

more elastic than the market demand. Now with the introduction of cellular technology, it is unclear whether BOCs can profit from higher local exchange prices.

Condition 2: *Joint cost allocation procedures must leave room for rate manipulation.*

Not only must the regulated BOC have an incentive to raise the regulated price of local service, but regulatory procedures must be sufficiently flexible so that this can be accomplished. Joint production has traditionally posed a severe problem to regulators. Long run incremental or marginal costs of both basic and enhanced services can typically be determined, but the problem is that marginal cost pricing will not always allow the BOC to earn a fair rate of return. For this reason, economists routinely prescribe some variant of non-linear pricing schedules that discriminate among inframarginal users and/or use Ramsey pricing to discriminate between two or more classes of customers.[26] The basic idea is to cover joint fixed costs by some allocation procedure that minimizes the welfare losses in the affected markets.

In practice, the economist's prescriptions for allocating these general overhead costs efficiently are seldom implemented. Instead, regulators adopt cost allocation methodologies based on various accounting conventions. In the context of the above scenario, the question becomes whether such accounting conventions are sufficiently flexible to enable the BOC to shift the cost allocation formula so as to raise the price of basic service above the preexisting level. This question is examined in some detail in the next section. It concludes that the joint cost allocation method promulgated in 1986[27] leaves only a modest scope for opportunistic joint cost allocation. Furthermore, under existing conditions, the enhanced service market is so small relative to basic service that the ability to increase reported basic service prices is quite limited. In sum, it appears that BOCs are constrained in their ability to shift joint costs in sufficient magnitude to effectuate a more than 5 or 10% reduction in the price of enhanced services. Whether a subsidy of this magnitude would be sufficient to guarantee the BOC dominance of these markets is problematic.

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[26]See Brown and David Sibley, The Theory of Public Utility Pricing, (Cambridge Press, Cambridge, 1986 and Breautigam, Ron, "Optimal Policies for Natural Monopolies," in Handbook of Industrial Organization, Vol. II (Eds. Schumalensee and Willig), New York, 1989.

[27]See FCC Docket 86-111. Also see Schumacher & Company, Section VI of "Regulatory Impact Review of U S West Advanced Technologies, Inc.", 1992 Report.

Condition 3: *The enhanced service market must also be subject to regulation.*

A regulated enhanced service market is also a key necessary condition to justify why an BOC might want to subsidize enhanced services at the expense of the local service market. If enhanced services were also subject to rate of return regulation, the excess profits made in basic service could subsidize enhanced services with the BOC earning a fair rate of return in the aggregated markets. Mathematically, profits earned in basic service $\pi_b(\cdot)$ less losses in the enhanced services $\pi_e(\cdot)$ are sufficient for the firm to earn an overall fair rate of return (r) on combined capital $(K_b + K_e)$:

$$\pi_b(P_b^r) + \pi_e(P_e^r) = r(K_b + K_e) \qquad \text{(B2)}$$

The regulated firm, being protected from competition, is free to adopt a variety of objectives such as the maximization of managerial perks. One model, developed by Baumol (1962), proposed that firms maximize sales or firm growth. Enhanced services hold enormous potential for revenue growth, whereas the provision of basic local service is a mature market with essentially 100% market penetration. A vibrant, growing company holds forth the promise of numerous high level managerial jobs to existing personnel. Even though Baumol's model has limited applicability in an unregulated market setting in which competitive forces limit manager's discretion, it would appear that in a regulated setting, a subsidized enhanced service market has enormous growth possibilities. Moreover, regulation provides a safe harbor in which managers can pursue growth maximization with immunity.[28]

But what if the rate of return earned in the enhanced service market is not subject to rate of return regulation? Would a BOC still rationally choose such a cross subsidization scheme. In this case, there is an opportunity cost to using the excess profits earned in the basic service market for subsidizing the price of enhanced services. Each dollar spent in subsidy in the enhanced service market is a dollar lost due to pricing enhanced services below cost. Overall profits of the BOC would

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[28]For example, there are no rival producers forcing firms to practice marginal cost pricing. Furthermore, since the return from both products is regulated, there are no possible gains from stock value enhancement via corporate takeovers. Indeed, to the extent that regulators grant returns in excess of costs of capital, stockholders' and managers' interests will be mutually aligned with a growth maximization objective.

be increased by eliminating the subsidy price (P_e^s) and pricing enhanced services to maximize profits (P_e^*):

$$\pi_b(P_b^r) + \pi_e(P_e^s) < \pi_b(P_b^r) + \pi_e(P_e^*) \qquad \text{(B3)}$$

Clearly, since enhanced services are unregulated, there is generally no incentive to cross subsidize.[29] While the BOC may still engage in joint cost manipulation to increase profits in local service, it would be inconsistent with profit maximization to engage in selling enhanced services at below marginal costs.

III. Welfare Effects of an Inflated Basic Service Rate Base

The previous section shows that BOCs may well have both the incentive and ability to shift joint costs (conditions 1 and 2) into the basic service rate base. Consequently, the BOCs may earn windfall profit from basic service customers which will show up as accounting profits in enhanced services operations. However, as shown in condition 3, there is no reason for this windfall to be used to subsidize the price of enhanced services. The purpose of this section is to show that any resulting welfare losses in the basic service market from shifting joint costs are likely to be quite small for two reasons. First, existing joint cost accounting conventions leave the BOCs with very little latitude for manipulating joint costs. Second, even if BOCs are successful in shifting some of these costs, the resulting welfare losses are likely to be inconsequential.

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[29]Implicit in the selection of (P_e^*) is the fact that at the competitive equilibrium price for ESPs, (P_e^c), is the notion that (P_e^*) will not fall more than epsilon below (P_e^c) because at (P_e^c), the BOC's marginal revenue equals (P_e^c). Any lower price will result in a marginal revenue much less than marginal costs (less any offsets via cost shifting).

1.   **Joint Cost Accounting Conventions Greatly Limit the Scope for Opportunistic Joint Cost Manipulation**

The critical determinant of the scope for joint cost manipulation is the accounting conventions adopted to assign joint costs. Historically, these conventions have varied dramatically, enabling serious abuses in some instances and, in others, having no material distortions. One of the most serious abuses arose in the joint cost allocation between basic local telephone service and long distance. Even though the local and long distance networks were physically separate with only a switching office being a joint cost connecting the two, regulators were not content to simply assign the switching costs. Rather, long distance customers were forced to pay a portion of the cost of the local service network under the logic that in the absence of a local service network, there would be no demand for long distance. By this logic, software manufacturers should be forced to pay for computers, since in the absence of computers, there would be no demand for software! Regulators completely confused the concepts of complementarity in demand with complementarity in supply. Fortunately, advances in regulatory accounting conventions now clearly focus on procedures to allocate costs when production is joint. In the case of basic service and enhanced services, accounting procedures require that activities devoted entirely to a given activity be allocated only to that activity. For example, employees, office spaces, and equipment used strictly for enhanced services must be allocated accordingly. Costs of employees engaged in performing both basic and enhanced services, such as in joint marketing operations, are allocated based on time spent or activity levels for basic service functions vis-a-vis enhanced services. The important point is that with accounting conventions requiring cost allocations based on the fraction of time spent or activity levels in alternative activities, regulators have a powerful tool to avoid and detect cost manipulation. Individual cost allocations are subject to audit. Furthermore, to the extent that one BOC systematically allocates a higher fraction of time costs to certain joint cost activities, it will become an outlier in cost comparisons with other BOCs. The BOCs have responded to the FCC's requirements (FCC Docket 86-111) for cost apportionment with highly-structured and detailed accounting processes.

In the case of U S WEST, separating costs between regulated and nonregulated activities (basic service and enhanced services) involves cost apportionment and accounting principles that

group costs into four apportionment categories.[30] These categories are: *Directly Assignable Costs,* *Directly Attributable Costs, Indirectly Attributable Costs,* and *Unattributable Costs.* The process for grouping costs begins by listing and identifying as regulated or nonregulated all services presently offered to customers or expected to be offered in the future. Each account is analyzed to determine whether its contents are dedicated solely to a regulated or nonregulated activity or are shared among regulated and nonregulated activities. Often, the accounts are sufficiently homogeneous so that the same cost factors can be used and no additional disaggregation required.

Directly Assignable Costs are those costs incurred exclusively for providing either regulated services or nonregulated activities. For example, the salary of a customer service representative dealing exclusively with interexchange carriers for the provision of access services is a cost assignable directly to regulated (basic) services. Many costs are incurred for the provision of both regulated and nonregulated activities. The grouping and apportionment of these costs is contingent upon whether there are direct or indirect measures of cost causation. For example, in the area of customer accounting service and equipment processing expense, costs are directly attributed to regulated services and nonregulated activities based on the number of regulated and nonregulated universal service order codes (USOCs) in service orders. Services and activities with such direct cost measures are classified as *Directly attributable. Indirectly Attributable* costs, however, are those in which there is an indirect measure of cost causation, such as the distribution of time spent on regulated services and nonregulated activities. An example from this group is the salary of a supervisor of craft employees supporting both regulated services and nonregulated activities. The supervisor's salary is apportioned based on the craft employees' time worked in each area.

More than 90% of U S WEST's costs are identified to be either directly assigned or directly or indirectly attributed. The remaining costs fall into the *Unattributable Costs* group. These costs are shared between regulated services and nonregulated activities but do not have a causal relationship. The salary of the chief executive officer is included as an unattributable cost. These costs are accumulated and allocated to *both* regulated services and nonregulated activities through the use of a general allocator. This allocator uses as its denominator the total of all expenses directly

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[30]Section VI, *Regulatory Impact Review of U S WEST Advanced Technologies, Inc.,* Schumaker & Company, 1992.

assigned or attributed to regulated and nonregulated categories. Because of this rigorous framework for assigning costs, it would appear to constrain the BOCs from allocating no more than 5% to 10% of the costs of enhanced services into the basic service rate base.

U S WEST's cost allocations are audited on a regular basis by both internal and external auditors. Implementation and enforcement of the FCC rules also require that U S WEST and other BOCs file and maintain current cost allocation manuals demonstrating in detail the application of these rules to their particular operations. U S WEST complies with this requirement by filing and maintaining the U S WEST Cost Allocation Manual (CAM).

## 2.   Estimation of Welfare Effects

To place into perspective the issue of welfare effects from the overstatement of basic service costs perspective, this section provides some sensitivity analyses to illustrate that the welfare gains from avoiding over-pricing basic service are trivial, yet the welfare losses from sacrificing cost complementarities are potentially huge. Using the familiar Harberger welfare formula, the welfare gain from eliminating inflated basic service prices is given by Figure B.1. Note that prior to structural separation the price of basic service is assumed to be P_b^r, which is assumed to exceed the long run marginal costs of basic service (LRMC$_b$). Now after structural separation, we assume for simplicity that the true long run marginal cost of basic service (LRMC$_b$) is unaffected, but the BOC can no longer allocate costs attributable to enhanced services to basic service, so that the basic service rates fall to $P_b^{r'}$. This presumes that there are no cost complementarities which would be lost as a consequence of structural separation. The resulting welfare gain (WG) is the triangle ABC, which can be mathematically described as follows:

$$ WG = \frac{1}{2}\left(\frac{\Delta P_b}{P_b^r}\right)^2 e_d B \qquad \textbf{(B4)} $$

where $\dfrac{\Delta P_b}{P_b^r}$ is the fractional decrease in the price, B is the customer's original local service bill and e_d is the price elasticity of market demand for basic service. In 1994, the average price of basic

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Figure B.1

Welfare Gain from Preventing Inflated Basic Service Rates
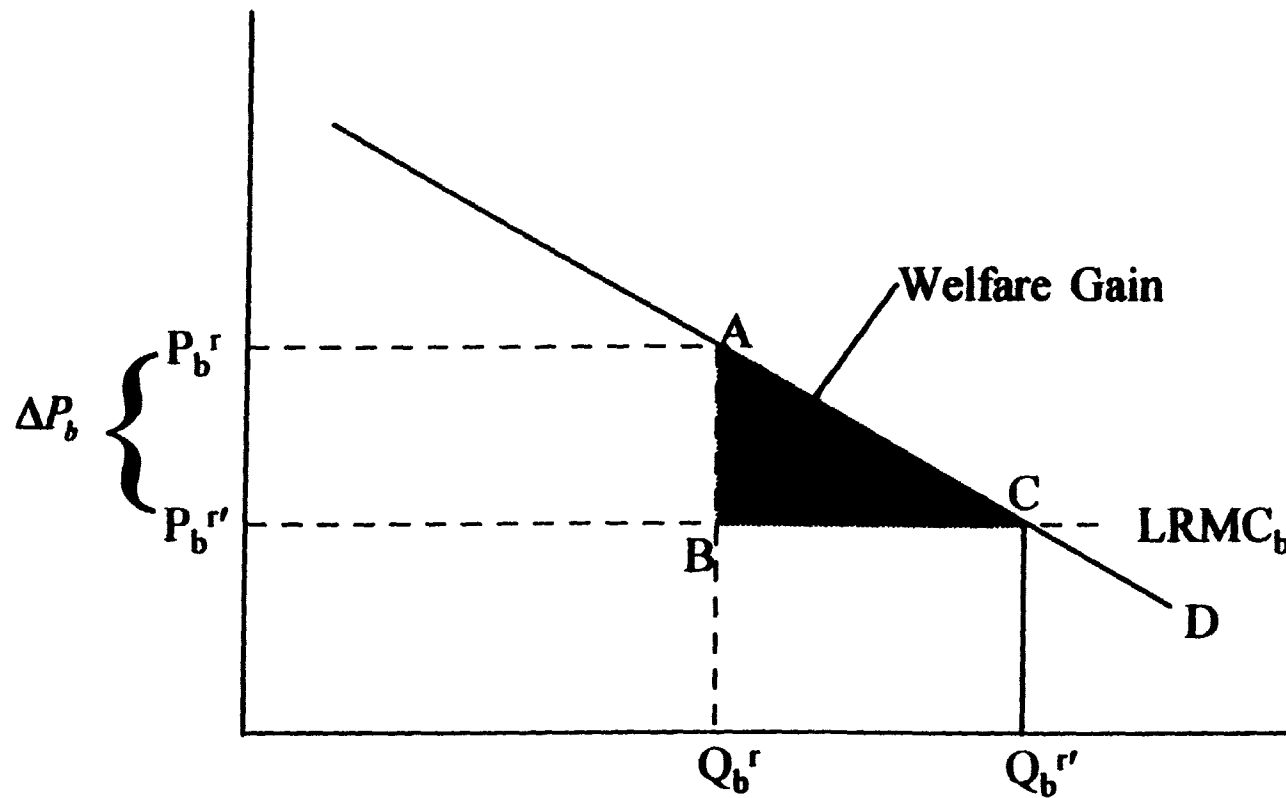
telephone service (B) in the U S WEST region was $23.90/month.[31] Next, in 1994, total costs of enhanced services were only 2.1% of basic service costs.[32] Assuming that 5% of the costs of enhanced services were shifted to the basic service rate base, the fractional decrease in the price of basic service would be .1%. Finally, one must estimate the price elasticity of basic service market demand. It is widely agreed that the price elasticity is extremely inelastic. The most common estimate for e_d in the literature is .1.[33] Substituting these values into equation (B4), we find that the monthly welfare gain is about one-ten thousandth of a cent per access line. The estimated welfare gain is $1.3 * 10^{-6}$/month for each access line. Aggregated across all 13.6 million access lines in the US WEST region and converted to an annual total, the welfare gain from avoiding inflated basic service rates is still only $215 annually!

Furthermore, this estimate is predicated upon the absence of any cost complementarities between basic service and enhanced services. Yet, there are good reasons to believe that there are significant cost complementarities. Figure B.2 introduces cost complementarities. Note that after structural separation, the cost of basic service is assumed to shift up to $LRMC_b$. Note that the price reduction in basic service is smaller than in Figure B.1 due to the increase in the marginal costs of providing basic service. The net welfare effect is the triangular welfare gain from eliminating inflated basic service prices as in Figure B.1 minus the welfare loss due to the higher costs of providing basic service.[34]

$$WG = Area\ ABC - Area\ P_b^r BJK \qquad \qquad \text{(B5)}$$

Mathematically, the two areas depend on the following:

[31]Based on 1994 basic service revenue of $3.9 billion and 13.6 million access lines.

[32]Absent cost data, we took 1994 revenues of $81.7 million from voice mail which when divided by $3.9 billion in basic service revenues, gives .021. Actual cost data would reveal much the same ratio.

[33]See Taylor (1980).

[34]In addition, the loss of cost complementarities would also raise the cost of enhanced services, producing an additional welfare loss in this market.

Figure B.2

Combined Welfare Effects from
Inflated Basic Service Rates and Cost Complementarities

$$WG = \frac{1}{2}\left(\frac{\Delta P}{P_b^r}\right)^2 e_d B + \left(\frac{\Delta C}{P_b^r}\right) B \qquad\qquad \textbf{(B6)}$$
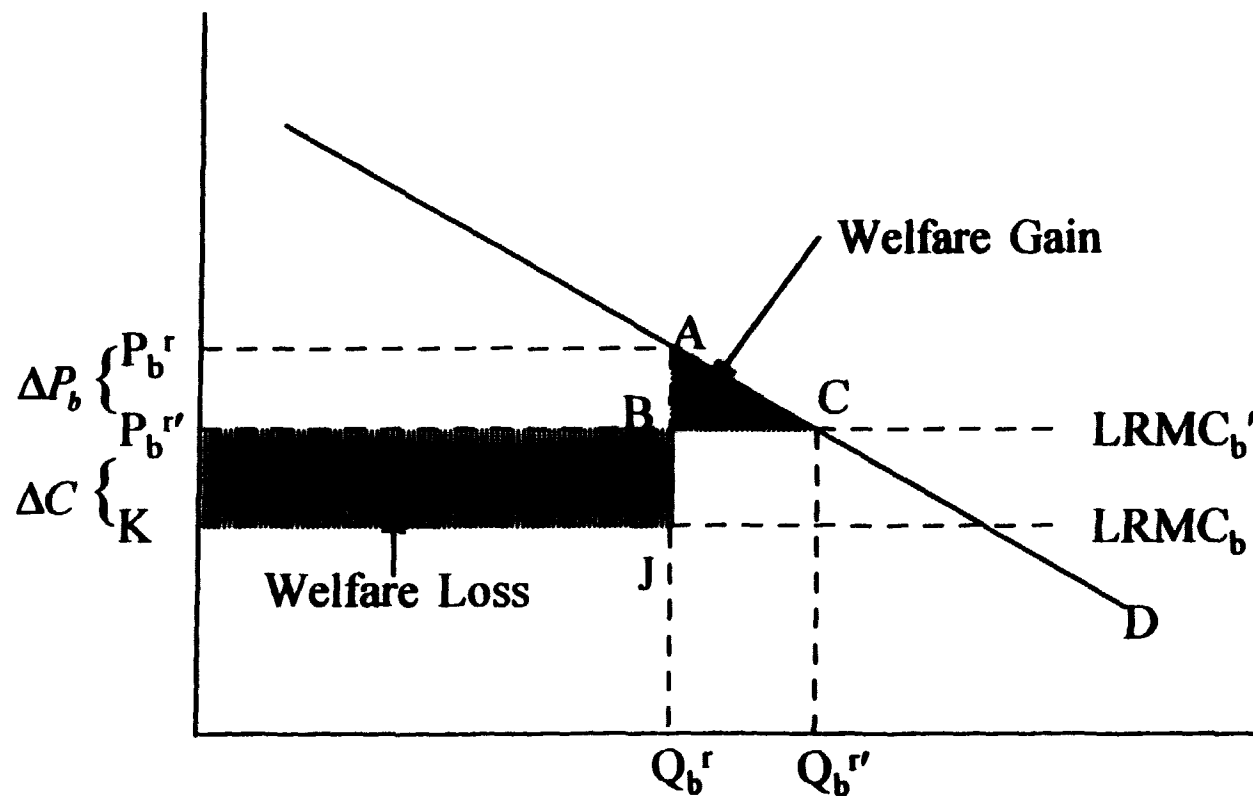
where ΔC is the cost increase due to the loss of cost complementarities.

To illustrate the importance of including the offsetting welfare loss from cost complementarities, Table B.1 shows the welfare effects corresponding to different rates of cost shifting ($\phi = 0, .05, .10$)[35] and to different ranges of cost complementarities ($\delta = 0, .002, .004, .006$)[36]

Simplicity assumes very modest cost complementarities associated with on-going operations and marketing costs. Both one-time disruption costs and R&D costs are omitted as well as the effects of higher costs on enhanced services. Even though the omission of all of these additional sources of welfare loss would further raise the welfare loss from structural separation, the effects in Figure B.2 are sufficient to overshadow any welfare gain.

Table B.1 uses equation (B6) to compute the net welfare gain (WG) for various parameter values of ϕ and δ. First, Table B.1 shows the obvious result that in a world of no cost shifting ($\phi = 0$) and no cost complementarities ($\delta = 0$) there would be no welfare effects. Second, assuming no cost complementarities ($\delta = 0$) and cost shifting of 5% and 10% ($\phi = 0.05, 0.10$), the monthly welfare gain per access line is 1.3×10^{-6} and 5.3×10^{-6}. The introduction of even slight cost complementarities ($\delta = .002$) implies that the welfare gain area in Figure B.2 dominates the triangular welfare gain area, resulting in welfare losses of $\$4.8 \times 10^{-2}$ per access line. Indeed the welfare gain triangle gets lost in the roundoff error since the welfare loss is roughly 9000 times greater than the welfare gain assuming maximum cost shifting $\phi = 0.10$. For larger degrees of cost complementarities

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[35]Note that ϕ relates to $\Delta P/P_b^r$ as follows: $\dfrac{\Delta P}{P_b^r} = \phi \dfrac{C_e}{C_b}$ where C_e and C_b are total costs of enhanced and basic services.

[36]Note that δ, the parameter reflecting the total cost complementarities in both enhanced and basic services is expressed for convenience as the fraction of basic service cost reduction due to cost complementarities in joint production. It is related to ΔC in Figure X.2 as follows: $\delta = \dfrac{\Delta C_b}{P_b^r}$.

$(\delta = 0.004,\ 0.006)$, the welfare losses are even more pronounced reaching $\$1.44 \times 10^{-1}$, per monthly access line. Multiplied by the 13.6 million access lines in the US West region and converted to an annual welfare loss, the total is $3.4 million dollars.

In offering these welfare calculations, we emphasize the qualitative nature of the results and offer some caveats. The exact quantitative magnitude can change as more refined estimates of costs are obtained. Furthermore, the estimate of the cost complementarity parameter, δ, is intended to give only rough estimates of potential cost complementarities. Such items are inherently difficult to quantify, and could well be much larger resulting in even greater welfare losses from cost complementarities. Not included in the estimates in Table B.1 are the welfare losses due to the loss of cost complementarities in the enhanced service market.

TABLE B.1

Monthly Welfare Gain per Access Line under Alternative Cost Shifting (ϕ) and Cost Complementarity (δ) Assumptions

	$\phi = 0$	$\phi = 0.05$	$\phi = 0.10$
$\delta = 0$	0	1.3×10^{-6}	5.3×10^{-6}
$\delta = 0.002$	-4.8×10^{-2}	-4.8×10^{-2}	-4.8×10^{-2}
$\delta = 0.004$	-9.6×10^{-2}	-9.6×10^{-2}	-9.6×10^{-2}
$\delta = 0.006$	-1.44×10^{-1}	-1.44×10^{-1}	-1.44×10^{-1}

APPENDIX C

III.2. Voice Messaging Service Pricing

RBOCs entered the market in 1990 and have driven the prices for Voice Messaging Services down considerably. This has enabled large segments of the population to buy the service which could not previously afford it.

Prior to the entry of the RBOCs, Service Bureaus typically charged $15-25 for a voice mail box. They charged substantially more for live answering services - sometimes up to $170 per month. RBOCs have been offering services at much lower prices since 1990. In real terms, these prices have been flat since their entry.

### TABLE III.1: RBOC RESIDENTIAL VOICE MESSAGING BASIC SERVICE PRICING ($/MONTH)

RBOC	1990	1991	1993	1995
Ameritech	6-8.00	Varies	5.25	6.75
Bell Atlantic	3.00	5.00	6.25	6.50
Bell South	6.45	3.95	6.95	6.50
NYNEX	6.00	6.13	5.95	6.00
Pacific Telesis	4.95	4.95	5.95	6.50
Southwestern Bell	5-6.00	5.50	5.95	5.95
U S WEST	6.95	6.95	6.45	6.95
AVERAGE	5.69	5.50	6.11	6.45
Real Prices ($1990)	5.69	5.28	5.52	5.66

Source: Yankee Group, IMF (Retail Price Index)

This has forced Service Bureaus to lower prices for basic Voice Messaging Services. For example Octel (Tigon), one of the largest Voice Messaging Service Bureaus, offered Voice Messaging for $15-25 in 1992 but has now lowered its prices to the $10-20 range. The price can be even lower with volume and long term discounts. The average price paid for Service Bureaus offering local automated voice messaging has now fallen from $20 per month to $10. However, since RBOCs do not offer live answering, the Service Bureaus have tried to recover some of their revenues by putting up prices for live answering (the average price has risen from about $70 to $80 per month).

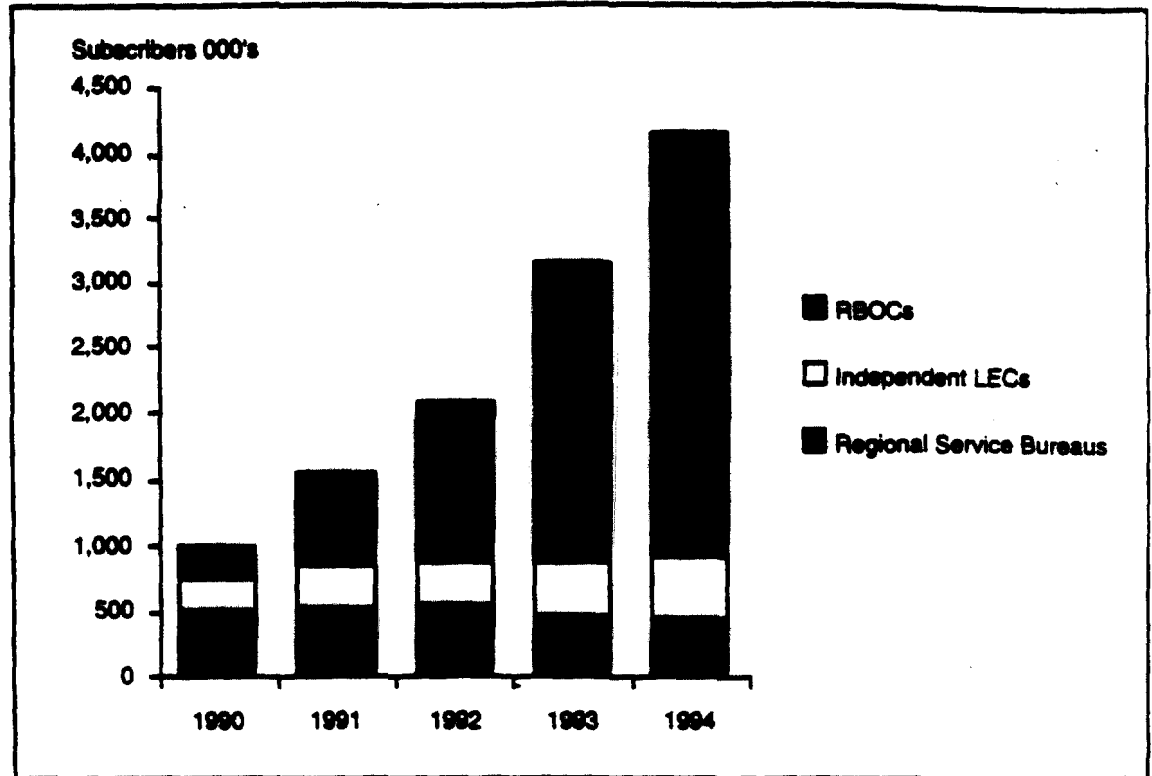## EXHIBIT III.3: VOICE MESSAGING SERVICE PRICES
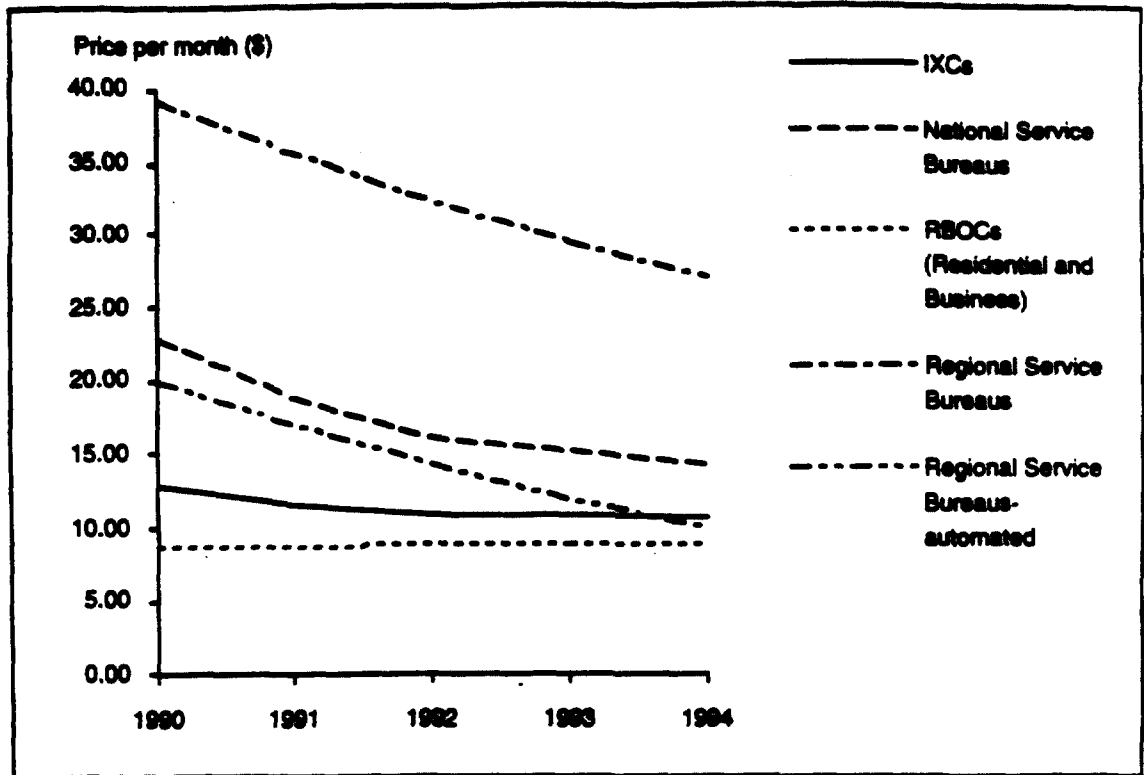
Source: Frost and Sullivan, Yankee Group, BAH Analysis

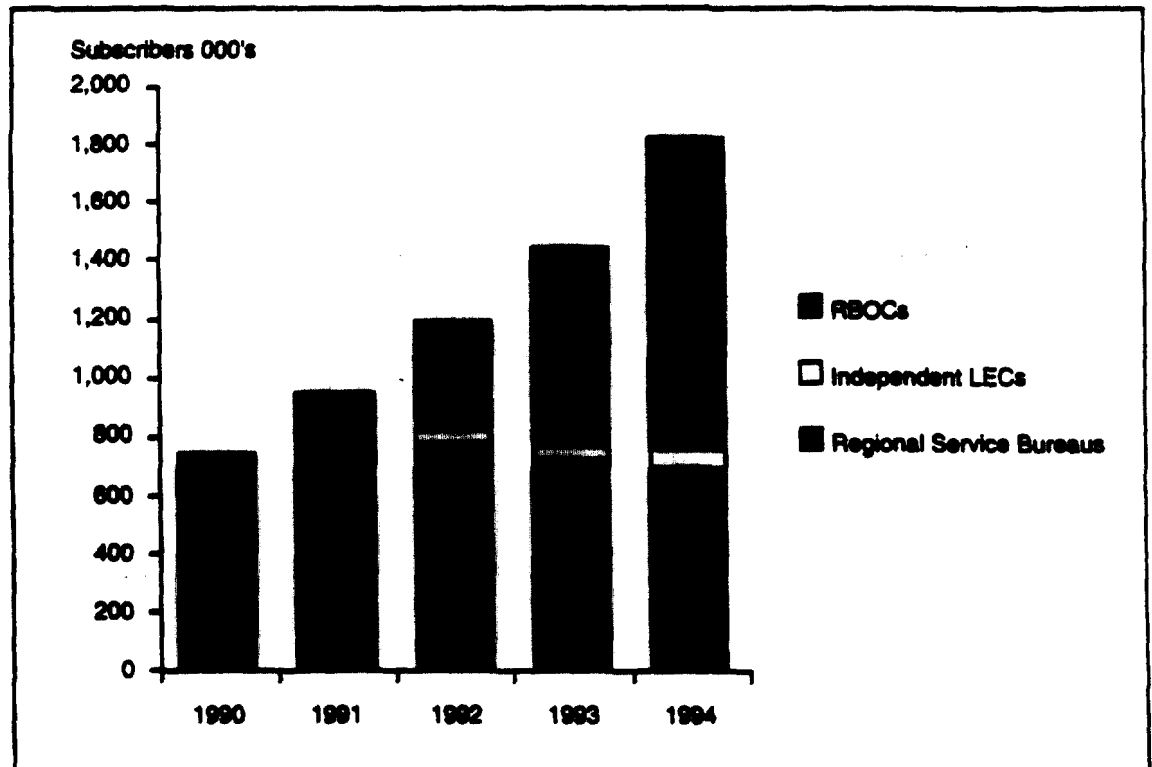### III.3. Voice Messaging Subscribers

The RBOCs participation in the market has greatly expanded the number of users in both the residential segment and the small business segment.

The prices that RBOCs are offering has greatly expanded the base of subscribers in the residential segment and the small business segment. RBOCs have brought this service to an entirely new segment of users for whom Service Bureau prices were much too high. In the residential sector, the total number of subscribers has expanded from 1.0MM in 1990 to 4.2MM in 1994. RBOC subscribers have risen from 240K in 1990 to 3.2MM in 1994. Service Bureau subscribers have stayed just about flat at between 400K and 500K.

USBBAD (WORD) TD006-3/95/NY.C

EXHIBIT III.4. RESIDENTIAL VOICE MESSAGING SERVICE SUBSCRIBERS

Subscribers 000's

■ RBOCs
☐ Independent LECs
■ Regional Service Bureaus

EXHIBIT III.5: SMALL BUSINESS VOICE MESSAGING SERVICE SUBSCRIBERS

Subscribers 000's

■ RBOCs
☐ Independent LECs
■ Regional Service Bureaus

Source: Frost and Sullivan, Yankee Group, BAH Analysis

A similar trend is has also taken place in the small business segment. The number of subscribers in the small business segment has risen from 740K in 1990 to 1,800K in 1994. RBOC subscribers have risen from a few thousand in 1990 to 1.1MM in 1994 and Service Bureau subscribers have stayed flat at around 700K subscribers.

III.4. Service Bureau Performance

Even though the RBOCs have signed up large numbers of subscribers in the residential and small business segments, the independent Service Bureaus have maintained their subscriber base and many companies have thrived, partly through targeting the business market with a larger range of products and functions.

RBOC competitive offerings have forced Service bureaus to reduce prices for Voice Messaging Service especially in the residential segment (which never represented their core business) and grow other parts of their business (in particular, equipment). Nonetheless, many players are still thriving. Voice-Tel, VoiceCom and Octel, the three major Service Bureaus, have all expanded dramatically in the last couple of years. Service Bureaus, in general, have expanded their services to offer combined live and automated answering services, cellular phones and pagers, 1-800 numbers, voice and fax messaging, domestic and international long distance calling, speed dialing, conference calling, travel reservations, voice response-based field activity management reporting, secretarial services and even voice messaging equipment sales. There has been a consolidation as well, as the Bureau's try to achieve the economies of scale of larger players. For example, VoiceCom more than quadrupled its revenues from $15M to 65M in 1993 when it acquired Async from MCI and the voice services division of Wang Information Services. Voice Bank, a smaller Service Bureau, based in Georgia has also bought out a number of small players in its region and plans to acquire bureaus in

III.5. U S WEST's role in the Voice Messaging Services Market

U S WEST has focused almost exclusively on the residential segment. Besides bringing an affordable service to this segment in general, it has benefited certain parts of the populations through the introduction of special products which would not be provided by independent Service Bureaus.

The RBOC emphasis on the subscriber segment described in Section III.3 is reflected in the break down of U S WEST's own subscriber base, which is heavily skewed towards the residential segment. 95% of U S WEST's subscribers are residential customers. U S WEST is providing a real benefit to the community by providing this service to a whole new set of customers. Most Voice Messaging Service Bureaus in U S WEST's territory do not even regard U S WEST as a direct competitor because they are pursuing a different segment of the market.

EXHIBIT III.6. U S WEST VOICE MESSAGING SUBSCRIBERS
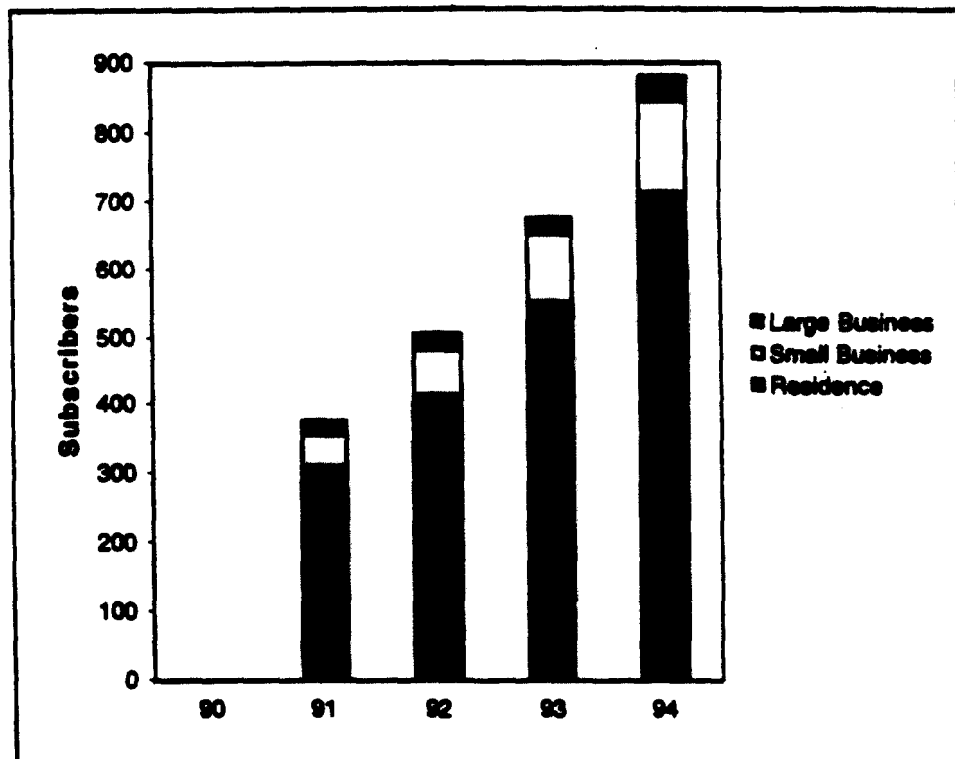
Source: U S WEST

In serving this market U S WEST has developed special voice messaging services to serve various niche segments of customers which a Service Bureau would be unlikely to choose to serve.

- Rural and low income areas: U S WEST provides Voice Messaging Services in a large number of rural areas and in areas in which low income groups are predominant. See **Appendix 1: Maps of U S WEST Voice Messaging Service Customers.**

- Minority Oriented Products: Customers in Albuquerque and Santa Fe can buy Spanish voice at no extra charge. The service will be extended to Arizona in May 1995

- Parent Teacher Link: U S WEST has developed a voice messaging system for use in schools. Schools are provided with mailboxes for use by each of their teachers. They can leave messages about matters such as homework, athletic events or cafeteria menus. They can also broadcast messages to selected groups of parents or individual ones if they subscribe to the service. Parents can call in and check the public messages or leave messages for the teacher. This service has generated a very enthusiastic response among both Parents and Teachers alike. Transcripts of focus groups held with teachers and parents are included in **Appendix II: Transcript of Parent Teacher Link Focus Group.** Similar services are available for other groups such as youth activity groups and charities.

TABLE III.2: FOCUS GROUP RESPONSES TO PARENT TEACHER LINK

GROUP	EXAMPLE RESPONSES	TRANSCRIPT REFERENCE[1]
Parents	• I get a call daily from [teacher]. She lets us know what the class is doing, for a particular class.	5.20
	• It is good to know for sure what they have to do that night for homework. If it is a project that they have, even for week, then I want to know about it.	5.1
	• They had assignment tests today and Jennie did not tell me; you know, it is one of those things that escapes the mind. I would not have heard that message; I would not have known she had to study for it	3.49
	• I think it helps; it is feed back for them and you are more likely to communicate a small message that you do not want to bother to send [by mail]	8.7
	• There is so many walls thrown up between parents and teachers and this is one way to break them down.	13.32
	• [US West] have a good tool that the schools should use	15.6
	• This is something that you can do quickly. You do not have to necessarily see the person face to face and it also saves the teacher time.	17.44

TABLE III.2 (CONTINUED): FOCUS GROUP RESPONSES TO PARENT TEACHER LINK

GROUP	EXAMPLE RESPONSES	TRANSCRIPT REFERENCE[1]
Teachers	• I do a lot of communicating as far as one on one, sending messages back	8.16
	• If you are communicating with the parents that makes your job easier and it benefits the children as well as the parents	12.12
	• It...keeps me organized too, in the sense that I have to put everything on once per week, so I have to have myself very well planned out.	12.20
	• I like the fact that you can use it at any time. You are not going to waste time. I can do it at 10.30 or 11.30 at night. I do not need to wake them up and [I can] still leave that message	12.34
	• Parents feel more comfortable sending me a message later in the evening	12.42
	• I do not call parents as often or as quickly if they do not have voice messaging	13.13
	• I have a lot of very intense parents, very concerned parents and....communication is the best line. It helps everybody	13.45
	• It is an efficient way to communicate	13.27
	• The big picture is that it was a great idea	14.29

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[1] *See Appendix II: Transcript of Parent Teacher Link Focus Group*

Articles from the local press about the plan are presented in Appendix III: News Articles about Parent Teacher Link. The service was also commended in a news spot on Phoenix Channel 10 News. The transcript of this is presented in Exhibit III.6: Transcript of News Spot on Parent Teacher Link

EXHIBIT III.6: TRANSCRIPT OF NEWS SPOT ON PARENT TEACHER LINK

You wonder whether your child tells the truth when you ask him if there is homework tonight and he says, no.

Frustrated you can't reach a teacher to answer a simple question?

US WEST hopes they have the answer.

A cutting edge voice mail system is now in three schools and blaming the family dog for chewing up an assignment just became obsolete.

This is Nancy Gunty, seventh grade science class at Saint Thomas the Apostle Catholic school. She hopes her students are paying attention; but just in case, (telephone sound).

Hi, this is Mrs. Gunty from Saint Thomas, and this is the assignment for seventh grade science for the week of January 23rd.

(Parent listening). Today in science we studied stars, the different characteristics of stars and how they are formed. For homework tonight, the student need to do exhibition M19.

Before Core Bellan even gets home from school, her mother hears her teacher's voice message: "Thanks Mrs. Gunty; we will talk to you soon about Cory's progress in science".

Tell me what you like about this voice mailing system. What I like about it is that it fosters so much communication between parent and teacher and the school. A lot of times I will dial in with a simple question that needs to be answer but that I would not dream of disturbing a teacher at night, after, her kids are in bed and she needs quiet time. I can do it at my convenience and then she message me back, which is great because she does not interrupt that I am doing. So, you can always plan a conference for something that is very important; but just for the everyday, it is great!

So, some day we are all going to be connected to each other through Voice Mail.

That is our hope; that is our hope and more customers would be using Voice Mail. It is really the way of the future and how we are going to communicate.

And we heard our own future through Saint Thomas' principal's Voice mail message: There will be a special presentation on the channel ten news, this evening at 10:00 o'clock. The presentation will be done by June Thomsen, one of the news casters for Channel 10 who visited our school today.

IV. ENHANCED FAX SERVICES